VOLUME 4 - NO. 1 APRIL 1996

The Low Band Monitor

The Circuit

April surprised many low band DXers with some great openings. On 160 meters, the **3V8BB** signal propagated as far West as Kansas City, Missouri and **ZD7VJ** was heard in the State of Colorado.

A few days ago I was listening to both sides of a **K6SSS** and **EI6S** QSO on 3.795 mz. with a *Sony Pro-80* and a 30" whip antenna.

Station **JY1** made a brief appearance on 40 meters on April 26, to the delight of many.

Annual Survey

Response to this years *Gene Autry Survey* that was mailed last month has been very good. Please spend a few minutes and share your input with our readers. The survey compilation from our readership gives everyone a good idea about the general state of low band DXing.

160 Meter WAZ

Top Band DXers that chase CQ Zones on 160 meters are advised that CQ requires only 30 Zones to qualify for the first stage of this most difficult operating award.

Jim Dionne, **K1MEM**, who manages this program has advised the *Low Band Monitor* that only 89 people in the world have qualified for the basic 30 Zone 160 Meter Award.

Gather up your 30 QSL cards and send **K1MEM** a check for $5.00 - plus your return postage. Jim's address is:

Jim Dionne - CQ 160 WAZ
31 DeMarco Road
Sudbury, MA 01776
U.S.A

This award would be a nice way to award yourself for all the hard work you did on 160 meters this season. If you act soon you may get a number less than 100.

In This Issue

• Oscilloscopes can be used by the low band DXer in a number of useful applications that will enhance overall station performance. Since the Dayton Hamvention™ flea market is coming soon, a strategy for buying an Hewlett Packard HP-140A oscilloscope is presented.

• Bob, **N6EK**, presents the 160 meter details of the fine **AL7EL/KH9**, Wake Island DXpedition that made over 400 top band QSO's. Bob does a great job explaining the decisions one has to make during an operation of this type. He has also provided the 160 meter logs for your review.

• The final *Low Band Monitor* seasonal awards totals are listed. Some impressive totals were turned in 1995 / 1996 that exceeded our first two seasons.

• We catch up on a few letters from our readers that got edited out of last month's issue.

Dayton Hamvention™

The Dayton Hamvention™ is scheduled for May 17, 18 and 19 this year. This will be the first time that the event will be held in mid May instead of the last weekend in April.

Steve, **N8BJQ**, reports from Dayton that April 26, 27 and 28 were very cold and that it rained all day on Sunday.

Perhaps the new May dates will bring this event the kind of great spring weather the Hamvention™ has deserved.

The Dayton Hamvention™ is a very challenging series of days that requires some serious planning. Here's a few basic notes that should help you enjoy the weekend.

• **Room Reservations** - Get your 1997 lodging plans made while you are at the 1996 event. Study the motels that offer the best value and get your reservations out of the way.

• **Physical Conditioning** - Don't try any fancy diets or exercise prior to Dayton, just take some nice long walks to condition your feet and boost your aerobic system. Walk for about a half hour the first few days, then go for at least an hour as the event approaches.

• **Material Shipping** - Find a UPS shipper near your hotel or motel who stays open on Friday and Saturday that can handle some of your acquisitions. This is critical if you flew to the Hamvention™ and will make your departure a lot easier.

• **Dining Opportunities** - Stay conservative with your appetizers and entrees on Thursday and Friday. Don't let one tainted meal sideline you for the entire weekend. You will probably need reservations for most of the finer restaurants.

• **Cash** - The Hamvention™ flea market is geared to the U.S. dollar or travelers checks. There is value and selection in this flea market that is unrivaled—go to your bank and get some travelers checks. You have 12 months to recover!

• **Flea Market Style** - You are in control if you know values. Prepare a printed wish list of mission critical items and the amounts you want to pay and carry the list with you.

If you see an item early on Friday that is 25 - 50 percent less than you planned—buy it. If an item is only 5 - 10 percent less than planned price—move on and check the price again in the afternoon.

• **Network** - Pool your wish list items with friends and make the acquisitions a team effort. A few extra sets of eyes can be very helpful in a crowd of thirty thousand people.

• **Technical Forums** - Attend as many as you can. These presentations provide your feet with some needed rest during the day.

• **Evening Functions** - The downtown *Stouffers Hotel* has been changed to the *Crowne Plaza Hotel* and is under new ownership. Hospitality rooms exist on almost every floor. If you are a CW heavyweight, don't forget the *Kansas City DX Club's* pileup test on the 5th floor that offers some great prizes.

• **DX Dinner** - The *South West Ohio DX Association* (SWODXA) Dinner offers the attendees a great program this year with Wyoming's Wayne Mills, **N7NG**, presenting:

Visit Myanmar Year 1996 - The Opening of Burma.

This gathering has a very impressive list of door prizes with *Icom*, *ETO* and *Svetlana* making major door prize contributions.

Tickets are $29 per person and sales are limited to 500 attendees. Seats are still available. Contact Tom Inglin, **NR8Z**, for availability.

• **Pace Yourself** - There is an outside wall on the North side of Hara Arena where you will see exhausted people resting and even gasping for air—try to avoid it!

Lance Johnson - Editor

My Boy Needs An Oscilloscope

The Classic Hewlett Packard 140A - by K0CS

Editor's note: The Hewlett Packard 140A is a dual trace, open architechture (plug-in) type oscilloscope that was an industry standard in the late 1960's and 1970's. Used by all branches of the military, NASA and most major research laboratories, this product is representative of what can be designed and manufactured in the U.S. when quality is the only objective.

Background - My technical knowledge of electronic test equipment can be archived in a file the size of a thimble. Over the years, as a low band DXer I would be stopped cold on many of my projects because I lacked an oscilloscope.

Other than knowledge and skill with CW, there is no better way to define and identify the amateur radio segment than "own an oscilloscope" and "don't own an oscilloscope".

The enthusiasts that approach this hobby in a true professional manner will own an oscilloscope, the "talks a good game" people like me will not—this situation has got to change.

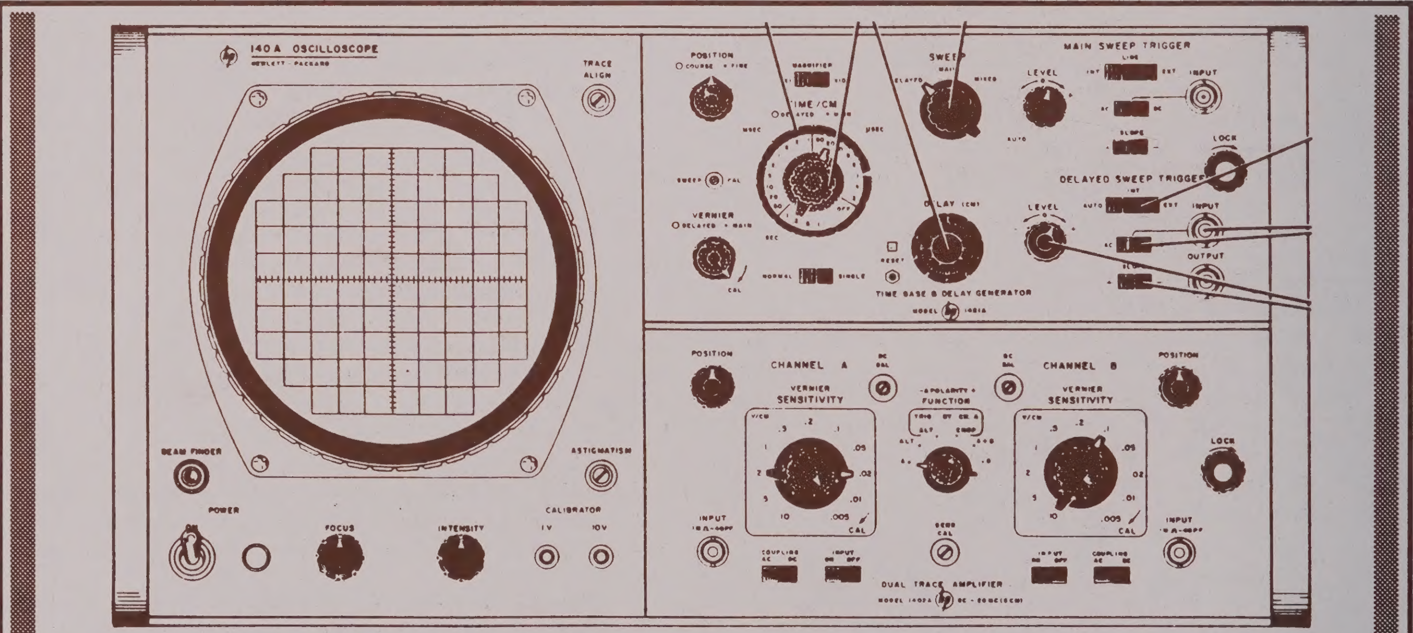
Robert Noyce and the Boys - The advent of the integrated circuit has created some service parts problems for the hobby buyer of a used "modern" oscilloscope. This real problem is called proprietary transistors and IC's.

When an active device on a 5 - 10 year old scope needs a replacement you are going to discover that the part (that is actually a tweaked twenty five cent 555 timer) has not been identified for replacement in the normal manner, but now carries a proprietary part number.

The cruel bottom line is you will have to order this item from the manufacturer and the cost will be substantial.

Companies like Hewlett Packard and Tektronix are used to dealing with organizations like the Pentagon, Bell Labs and the Mayo Clinic. You will always find their support to be professional, timely and correct.

Unfortunately, you, as the low band enthusiast, will have to take one of your kids out of college for a semester to buy a handful of parts. Trust me—I've been there!



Hewlett Packard HP-140A Oscilloscope - Shown here with the popular HP-1421A Time Base Generator (upper) and 1402A Dual Trace Amplifier (lower) Plug-Ins

The Scope Market - If you just inherited 50 acres in Aspen, Colorado or bought MicroSoft when Bill Gates was an adolescent, read no further.

The current offerings on the scope market today are simply awsome. Digital technology, links to computers and exquisite displays are the order of the day. These products are priced in the $10K - $25K range. Go for it - big guy!

Good used versions of contemporary product seems to start at about two thousand dollars and the careful buyer can probably bring a 5 -10 year old laboratory grade unit home from a hamfest for a little over a grand or a straight swap for the Kenwood TS-930 you have been nursing along for the last ten years.

The Underground - I believe that the best approach for the hobby enthusiast to buy an oscilloscope is through the the surplus or flea market surplus underground.

I believe that an enthusiast can get into the oscilloscope game and own some handsome equipment for a few hundred dollars—if he shops carefully.

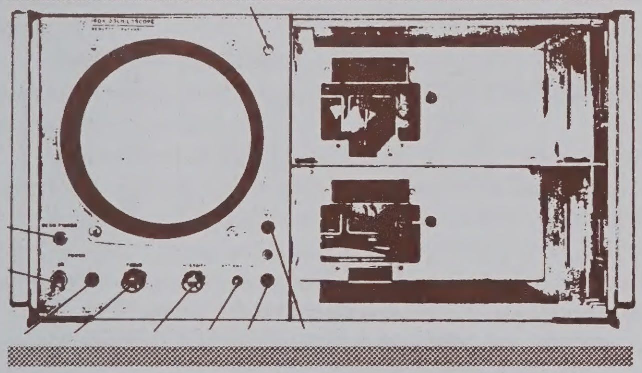
This older technology equipment will not work as well as the more modern offerings, but it did function well enough a few years ago to be used by this countries most important technical institutions.

Exposure to the older and simpler test equipment can also serve you well because you can actually understand the operation. You might even learn something new!

The HP-140A - My choice for a low cost hobby type oscilloscope is the Hewlett Packard 140A. Hewlett Packard is a billion dollar corporation and needs no introduction. They have been a leading edge, world class organization for many years. Let's review the logic of my choice.

• **Volume** - This product was first sold in 1963 and was manufactured in various forms for over a decade. There are thousands of the units all over the world. The companion Plug-Ins are the HP 1400 series that were also manufactured in huge volumes for about a decade.

• **Original Applications** - The HP-140A mainframe sold for $600 - $800 in the 60's and 70's. These were mission critical instruments that were frequently calibrated and well cared for by their well financed institutional owners.



HP-140A Mainframe - The Time Base plugs into the top and the Amplifier plugs into the bottom for most scope applications. The Divider Plate must be installed before each plug-in section is inserted. Each plug-in unit has a twist-lock to firmly hold it in place.

• **Open Architechture** - Since plug-ins are used, the owner can buy the type of plug-ins that suits his needs.

Starting with the basic 1401A, a DC - 450 kc. Dual Trace Amplifier and the 1420A Time Base, the user can select a wide assortment of plug-ins to match the application.

This flexibility is what made the HP-140A the scope of choice for over a decade.

• **Durability** - The HP-140A mainframe weighs 35 pounds and has superior materials throughout. This was not a mass produced consumer product. The HP-140A scope represents some of the finest electromechanical design and workmanship ever executed in the U.S.

The stainless steel frame, etched front panel lettering and the best looking transformer in the world highlight the aesthetics. Look closely - the HP-140A is a work of art.

• **Documentation** - Hewlett Packard application and service documentation has always been world class and you will find that these manuals are very user friendly, because they were written before the advent of IC's and proprietary devices.

• **Servicability** - The manuals are designed to assist the owner in servicing the units. The printed circuit boards are first rate and component access is simple when compared to todays micro size technology.

• **Display Size** - The CRT used in the HP-140A in the it's various forms is large and easy to read. The more modern amber displays are a bit better, but at ten times the cost.

• **Pride of Ownrship** - The HP-140A was the best technology in the world in the 60's - 70's era. The one I own flew on U.S. Air Force C-130 missions all over the world and was recently used in satellite and NASA Space shuttle launch support—not a bad pedigree!

• **Abandoned by the Pros** - Today, the HP-140A is simply a "boat anchor" to the modern day electronics tech who is working in a digital environment that requires more bandwidth, smaller size and more advanced features.

The HP-140A is no longer offered by the Surplus jocks and was last sold for $395 by leading surplus houses.

This is good news because there is very little demand for HP-140A units from the professional sector, a situation that will surely help the hobby type ham radio buyer in his quest for value at the least amount of cost.

Conclusion - High production volume, great quality, flexibility and great documentation make the HP-140A a good choice for the amateur radio buyer.

When you assess the weaknesses of the HP-140A and HP-1400 Series plug-ins compared to it's modern scope counterparts from a "street wise" perspective you can easily turn these weaknesses into strengths—let's buy one!

Developing A Buying Strategy - The Dayton Hamvention™ is one of the best places to make a used oscilloscope purchase. I bet you have thought about doing this for years, but chickened out, only to go home with a bag of HF connectors and an Antenna Handbook..

• **Get Cash Funds** - You will need a bit of cash to obtain a used oscilloscope at Dayton. I would set a cash or travelers check budget of $300 - $400 as a minimum. Credit cards will usually not get the job done.

• **Logistics** - Find a *Mail Boxes Etc.* or other UPS provider that will be open Saturday evening. Make the buy on Friday if you can and then have the scope shipped home.

This is necessary due to the fragile nature of the CRT and the fact that you may not have the luxury of a lot of cargo space in your vehicle or shuttle bus ride to the airport.

• **Your Discuise** - Leave your Rolex watch and Stanford University Class ring at home and purchase a *Skoal* or *Red Man* cap at a local truck stop. Wear that old sweatshirt and jeans outfit you used to paint the house. Don't botch your cover by wearing high quality running shoes—wear the shoes you use to mow the grass—*Skoal* man.

• **Your Story** - I have tried a number of different pitches on the sellers of test equipment and I like the, "My boy needs an oscilloscope" scam the best.

After you have found a seller that has a good looking HP-140A mainframe and some plug-ins, pretend that you have this imaginary 11 year old son who "likes to tinker" and go with it. Be sure to tell the surplus vendor that, "he's going to pay for his scope with his paper route money", this statement will usually set the tone—*Skoal* man!

Now, knowing that an HP-140A is available, initially pick out a newer $3000 - $4000 storage scope and ask the vendor, if he would take $75 for the item—this will confirm that you are a tyro and his next move will be to explain the facts of life to you about precision lab grade test equipment.

As the conversation continues, he will probably move you over to the HP-140A at a decent price.

Inspecting the Mainframe - The HP-140A Mainframe is built like a tank, but should be inspected before you make the purchase. Here's a few tips you should use to select a good mainframe.

1. Age of the Unit - On the back of the HP-140A you will find serial plate that will have a three digit prefix like 801-01154. On the three digit serial numbers add 60 to the first digit and you have the year of manufacture. An 801 series model was manufactured in 1968. A 701 series model was manufactured in 1967.

2. Cooling Fan Filter - All HP-140A's were cooled by a fan at the back of the unit. There should be a high quality stainless steel filter that mounts on the chassis. Check the condition of the filter. If it's clean - that's good. If it's missing or soiled, this unit has had very heavy use.

3. CRT - The top cover is easily opened by removing four Phillips screws. This will give you a close look at the CRT and the two busses that mate with the plug-ins. Make sure that everything is straight—a dropped mainframe may have a broken buss. The CRT should be intact, but make sure that the leads going to the CRT are not discolored.

4. Power Supply - Carefully set the HP-140A mainframe on it's top and remove the four Phillips screws that hold the bottom cover in place. The bottom cover will have a wiring diagram painted on it's surface. Marvel at the high quality power supply transformer and note the location of the four fuses. Look for signs of trauma and associated discoloration.

5. Review the Offering - If the unit passes the above listed inspection, you now need to access the purchase based on the what is included in the sale. Don't forget these or you will be sorry!

- **Operating and Service Manual** - The HP-140A manual is currently being sold by the test equipment manual jocks for $25 - $35. Hewlett Packard still sells this manual in microfiche form for around $10. Does the seller have one? Does the serial number of the mainframe match the serial number range covered by the manual?
- **Power Cords** - The HP-140A power cord is not a simple item available at Home Depot or Radio Shack. The current going rate is $7 - $10 for a power cord if you can find one. Does the seller have a power cord?
- **Divider Plate** - The plate that goes between the two plug-ins is absolutely critical. If one is included with the mainframe that's a bonus. Don't forget to buy one when you shop for plug-ins, if the divider plate is not included with the mainframe.

What to Pay - The value of the mainframe is of course based on overall mechanical and electrical condition and the items included. My last price reference on a nice complete HP-140A, with manual and power cord was $395 in 1995.

A clean unit with a nice bright CRT is probably good value at around $200 - $250.

HP-140A mainframes that sell for $100 - $150 or even less would be excellent buys, but should be inspected very closely for excessive use or some fatal flaw.

As you adjust your *Skoal* baseball cap and make your cash offer to the seller just remember that you still need to add a few plug-ins to make the mainframe work.

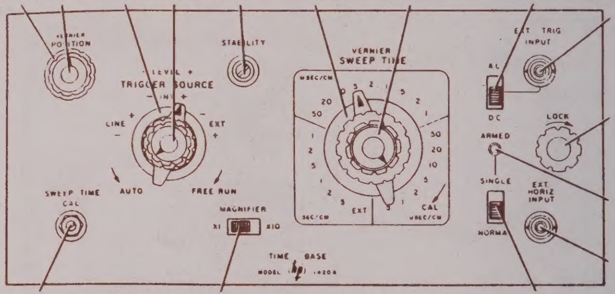
Selecting the Plug-Ins - Now you are ready to get serious and obtain at least two plug-ins to make the HP-140A into an oscilloscope. This will require a bit more effort and probably a bit of luck.

1. Age of the Plug-Ins - The same rules apply for the plug-in serial number system that apply to the mainframe.

Add a 60 to the first digit of the serial number prefix to get the year of manufacture. Be sure that the serial number of the plug-in matches the owners manual, as design changes were common.

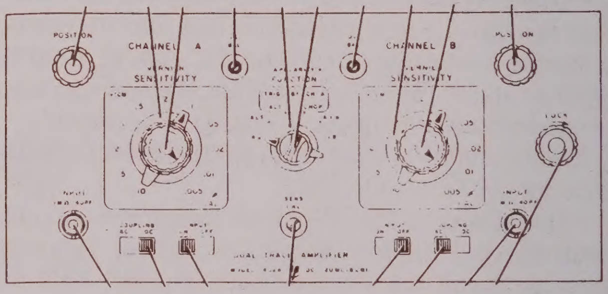
2. What to Buy - You will want to buy one Time Base Generator and one Dual Trace Amplifier to get started.

The most economical Time Base is the 1420A that provides the HP-140A with basic sweep, triggering and horizontal amplifier functions.



Time Base - Here's the basic 1420A Time Base. This simple unit would be a good choice for a beginner. The Time Base installs in the upper compartment.

A nice low cost companion Dual Trace Amplifier is the HP-1401A that is designed for DC - 450 kz. low level audio type applications.



Dual Trace Amplifier - Here's the next step up from the basic 1401A Dual Trace Amplifier - the 1402A. The 1402A has 20 mz bandwidth - the 1401A 450 kz.

I like these two models for their simplicity and low cost. They are simple to use and will get you familiar with your oscilloscope in a minimum amount of time.

3. Inspection - Let's cover some key points to consider when you look at an HP-140A plug-in. The plug-ins weigh about five pounds each and are not as difficult to handle as the 35 pound HP-140A mainframe, but they merit more of your concentration.

- **The Operating and Service Manual** - This is really the key. HP Operating and Service Manuals tell you precisely how to set-up, calibrate and service each plug-in. If the seller has the manual this is a good sign. The manuals on some exotic plug-ins sell for $30 - $50.

- **Dust and Dirt** - The air flow from the fan at the back of the mainframe pulls air through the plug-in for cooling. The accumulated soil is a good indication of the relative amount of time the plug-in has been in use.
- **Nylon Rivets** - All plug-ins used nylon rivets on the bottom and sides of the chassis to aid in alignment with the mainframe buss. If these are missing, the unit has had rough use.
- **Divider Plate** - You must obtain a Divider Plate to use your plug-ins. There are two styles. The older Divider Plates were solid, the newer designs have a convenient pull-out hole to aid in removal. The Divider Plate should also have nylon rivets.
- **Check the Buss** - The buss at the back of the plug-in can be bent or broken if the unit was mis-handled. Look it over closely. If cracked or broken the plug-in has been dropped.
- **Scratches On Chassis** - These can easily be removed with steel wool after the purchase, but are a good indicator of general wear and tear.
- **Derivative Models** - Some of the HP plug-ins have derivative model and serial number plates that denote a custom physical or electrical modification that was made for the customer. These mods are normally transparent, but can be used to your advantage when bargaining with the seller.
- **Scratches on Front Escutcheon** - Most plug-ins used etched lettering like the mainframes. Severe scratches can be sanded off and the entire escutcheon repainted.

Older units with etched lettered escutcheons are often better choices than the later units for this reason.

- **Varistors** - Many of the more expensive plug-ins used varistors along with tubes and transistors in the circuit design. Varistors are a valid cost issue because they are no longer manufactured.

The HP-1421A Time Base and Delay Generator uses nine custom 6CW4's from three manufacturers. My advise would be to look for an additional low cost "back-up" plug-in to use for parts.

- **Front Panel Knobs** - Look carefully at the condition of the knobs. HP control knobs are not cheap. A replacement "Lock" knob from HP is still available for $18. I managed to find a used one at a dealer for $7. Some HP-1400 series knobs sell for (ahem) $75 on the more complex plug-ins.
- **Calibration Labels** - Plug-ins will usually have some type of calibration label on the front escutcheon. Lots of calibration labels indicate that a plug-in was well maintained.

Making the Purchase - You will probably have to buy your plug-ins in pairs from some sellers. This is probably a fair arrangement. Don't expect to get any guarantees on the plug-ins performance, but remind the seller that your "son" works very hard on his paper route.

A clean working plug-in that has the manual is easily worth $75 - $100. If the plug-in has no operating and service manual, drop $25 from your offer. Older units with scratches can be restored if they have the etched lettering, but a badly scratched unit's asking price should be challenged.

I believe that a careful buyer could get a couple of nice plug-ins with manuals at Dayton for $125 - $200.

Taking the Scope Home - If the "Skoal Scam" worked, the first thing you need to do is obtain a nice frequency compensated probe for your new oscilloscope.

If you are fortunate, you will probably find a probe in the flea market or have one included with your HP scope and plug-in acquisition.

A nice aftermarket probe is available from *Tucker Electronics* (800) 527-4642. Ask for the Universal 1001S, 100 mz. X1/X10 Probe. The cost is $24.95.

Let's review a few steps to take after you get the unit home. *All activity described here is with the HP-140A disconnected from the AC mains.*

- **Mainframe Details** - Use *Windex* and a soft paper towel to clean the cabinet. These units are old, so get a roll of paper towels and wash the beautiful cabinet down!

The next step is to remove any ugly calibration stickers from the front panel using patience and *WD-40*. Take your time and you won't scratch the panel.

If the mainframe has permanent felt-tip pen markings, there is a product called "Goof Off" that can be used with a *Q-Tip* or a cloth rag to remove the markings. Remove your plastic knobs before using this product and rinse the surface quickly or you will remove some paint.

Apply a little *Armour All* to the Blue Vinyl Panels and to the mainframe control knobs.

Remove the bottom cover (with the unit unplugged) and check the four buss fuses for correct value and continuity.

Make sure that the mainframe is configured for the line voltage you plan to use.

- **Divider Plate Details** - Take the Aluminum Divider Plate outside and with a medium steel wool, working in one direction remove any oxidation. Be careful to not damage the nylon rivets. Next, using a light steel wool, buff the Divider Plate to a mirror like finish if you wish. Carefully slide the Divider Plate into the Mainframe.
- **Plug-Ins** - Clean the front panel with *Windex* and be sure to wipe under the knobs. This step is necessary because more people used to smoke in the 60's and 70's than today and the nasty residue might be behind one of the controls.

If calibration labels are present, start with *WD-40* and carefully remove them.

Take the plug-in outside and using medium steel wool polish the aluminum chassis, making sure no metal residue gets on the circuit board and that the nylon rivets are not damaged. Use a small dry paint brush to remove any dust from the circuitry.

- **Firing Up** - Familiarize yourself with each plug-in by reading the *Initial Set Up* instructions that come with the operating manual.

Before you insert the plug-ins make sure that the "Lock" knob is fully counter-clockwise. Once mated with the mainframe, rotate the "Lock" knob fully clockwise on each of the plug-ins to properly secure tham.

Connect your new probe to the "A" Channel of your Dual Trace Amplifier, plug in the AC cord and turn the HP-140A mainframe on.

Allow a few minutes for the scope to warm up and position your traces on the display.

Welcome to the oscilloscope game—*Skoal* man!

160 Meter Wake Up Call

Top Band Details About the Recent Wake Island DXpedition - by N6EK

Editor's note: One of the season's best low band operations is discussed by Bob, N6EK. The AL7EL/KH9 DXpedition put many new low band countries in a lot of U.S., JA and European logs.

I believe I made all the CW QSOs on 160 except for the first dozen or so which were made by Don Greenbaum, WB2DND. The low bands were our second priority on this trip. Since Wake Island is very high on the European most-wanted list, our first priority was to give an all-time new one to as many Europeans as possible. We had openings to Europe on twenty and forty every day at our sunset, which is why we were not on 160 at that time.

The Battle Creek Special antenna was phenomenal. As most of you know, a Battle Creek Special antenna is not a commercial antenna. Each one is hand made. I believe three have been made. We had the "lightweight" one which fits in a ski bag and a suitcase and must weigh around seventy pounds. I had not seen a Battle Creek Special before.

I loved the engineering and it played like gangbusters. Everyone who worked us on 160 meters should thank the Battle Creek crew. Not only is it a great antenna, but it served to psych us up about 160 meters and draw our energy to that band.

We used the Battle Creek Special for receiving as well as for transmitting. We also had a 600 foot Beverage for receiving, but it didn't work well for me. I tried a bunch of A/B tests between the Battle Creek Special and the Beverage and the Beverage was no better.

The Beverage was a pain to use because we didn't have an antenna relay so we had to switch antennas using a front panel switch on the rig. The Beverage was oriented at about 30 degrees. (Chicago is about 46 degrees from Wake.)

We had a commercial toroid impedance transformer between the near end of the Beverage and the coax. At the near end, we used the station ground which was probably dominated by the Battle Creek Special ground wires.

The far end was connected to a ground rod through a resistor. I suspect the ground rod didn't do much. I suggest that either the Battle Creek group or some other group might want to think through what we should have had and put together a loaner kit for one or more Beverage antennas to go along with the Battle Creek Special.

Note: I am in the middle of a bunch of other stuff right now, and am not ready to be educated about receiving antennas. Please don't send me a bunch of communication about this problem.

If you know what we should have had, consider putting together a "Beverages for Dummies" loaner package for the next guy!) I know I could have worked another whole layer of stations with a better receiving setup.

The nights of February 2nd, 3rd and 4th were super. Lots of action. I started each night listening on 1837 and working everybody until a crowd gathered, worked by districts until things quieted down, and then took everyone again.

When there was no one left to work on 1837, I would listen for JAs. People were able to send us e-mail while we were on Wake and about half of the e-mail we received was about the 160 operation.

The topic that generated the most e-mail related to 160 was from several hams in Louisiana who felt that my going by districts in the order 1-2-3-4-8-9-0-5-6-7 did not work for them and that I should have put the fives before the zeros.

I concluded that the real problem was not a change in the order of the districts, but my initial assumption that I should work North Americans at their sunrise which got me on 160 later than I think I should have gotten there.

As the week went on, I went to 160 earlier and earlier. I would be interested to know if East Coast stations noticed a distinct peak in my signals at a certain time around their sunrise or if my signal was fairly constant until it died due to daylight.

On the 4th we got an offer we could not refuse. We received a message from John, ON4UN, to be on 160 at a certain time around his sunset to try to work him. We were there, but did not hear John. I assume he didn't hear us. We did manage to work four OH's and a couple of UA4's, however. One of my real regrets was that I was not able to put more time into trying to work Europe on 160. I would have loved to have spent a couple of nights calling CQ on 160 through the European evening and into our sunrise, but our first priority was to give as many people as possible in Europe an all-time new one and that meant using other bands.

The night of the 5th the rate dropped way down. The signals seemed a lot weaker. We had a lot of QRN and the spacing of the static bursts made copying code at 20 WPM really tough. I asked people to QRS, because at around 12 WPM it was much less likely for a dit to be covered up by QRN.

Unfortunately, about half the people kept their speed the same and merely increased the space between letters; that didn't help at all! (I had a similar problem to Europe on forty. For almost an hour each night I was copying both long and short path simultaneously at about equal strength. I asked people to QRS because that made it possible to separate out the echo, but many people merely increased the spacing between letters which again didn't help at all.)

Anyway, I couldn't tell whether the signals were weaker because I had pretty much worked everyone I could hear or whether the propagation had deteriorated. A third theory is that the weekend was over and fewer people could be on the air at the appropriate time.

It was true that almost every time there was a good clear signal it was someone making an insurance contact. I would be interested in any impressions from east coast stations in this regard.

The night of the 6th was the only one we did not focus on 160 CW during the North American early morning. We used the Battle Creek Special on seventy-five and eighty that night. It was our only eighty meter antenna and it worked very well on eighty.

The night of the 7th was our last night. We had taken down many of the antennas but left the Battle Creek Special and the vertical we used on forty meters up until dawn. (This was actually pretty daring of us and if our plane out hadn't been delayed we might not have been able to finish our packing before we left!)

I spent all night going back and forth between 160 CW and 80 CW, but, as on the 5th, there wasn't much action.

AL7EL/KH9 - 1996

Wake Island 160 Meter Report - Who is in the Log?

by Bob - N6EK

The following is a list of the 455 calls that are in the log for **AL7EL/KH9** on 160 CW. In addition to these, we made five QSOs on 160 SSB. I am hoping for no more than two percent busted calls on 160 CW. We are not providing the time and date information publicly so that we can in good conscience correct busted calls.

In other words, if we made public the date and time for each QSO, someone who didn't work us could find someone with a similar call to his own and send us a card for the time and date of their QSO, hoping we would think we busted the call. If we were to have made the time and date information public, we would not have been willing to QSL any busted calls.

People who made insurance QSOs appear in the list more than once. The insurance QSOs were made mostly toward the end of the operation and for the most part seemed appropriately made.

Send QSLs to Lloyd Westbrook, **K4HQI**. Be patient—we are using color photo cards and it will be a while before they are back from the printer. We hope Lloyd can start putting cards in the mail around the first of May.

Did You Get In the AL7EL/KH9 160 Meter Log?

AA0RS AA0RS AA4MM AA5MH AA6TT AB0X AB4RU AB5K AB6LJ AB6ZV AB6ZV AB6ZV AC4NJ AD0O AJ6T JA0CIU JA0DAI JA0DET
JA0DWY JA0HXV JA0MVW JA0ROQ JA0YUD/QRP JA0ZED JA1AUD JA1DM JA1EOD JA1GVJ JA1HQT JA1IFP JA1JPK JA1JRK JA1QXF
JA1SNF JA1SYY JA1SYY JA1UQP JA2AO JA2CG JA2DHG JA2FJP JA2IVY JA2MOG JA2OLJ JA2OLJ JA2PJC JA2PJC JA2VPO JA2XW
JA3AAW JA3BVD JA3CSZ JA3DY JA3FYC JA3MHV JA3ONB JA3REK JA4DEN JA4DND JA4DSC JA4EPE JA4LKB JA4LXY JA4RTX JA5DQH
JA5HQH JA5IU JA5JUG JA5MHD JA6GCE JA7BXS JA7JI JA7JWF JA7LMZ JA8EAT JA8EVL JA8RJE JA9AIG JA9FPI JA9HCG JA9JFO
JA9NLE JA9NLE JA9OHZ JE0MUV JE1CTM JE1OMO JE1POK JE1SPY JE2EHP JE2OVG JE4WKR JE6IGP JE6IGP JE7RJS JE8BKW
JF1VJW JF2MBF JF2MNO JF2RZJ JF3MKC JF4VZT JF4VZT JF6OJX JG1TPT JG2YFS JG3FMA JG3QCW JH0BBE JH0BBE JH0BQX
JH0INP JH0KHR JH1AJT JH1HGC JH1ORA JH1ORA JH1RES JH2ABL JH2AHZ JH2BFY JH2FXK JH2KAG JH2QMT JH2VVH JH2VYC
JH3GAH JH4EZI JH4IFF JH4PMV JH4UYB JH6ALF JH6CFX JH7CFX JH8ASO JH8CFZ JH9UYZ JI0SFQ JI1NJC JJ1BMB JJ1LIB
JJ2MST JL1AGY JL1OYU/4 JL2PQV JL2WNA JL3JTD JM1SMY JN1EVG JN1ZLR JO6WVE JP1CXN JP2MYJ JQ1CEG JR2CQS JR3QHQ
JR3VXR JR4EGB JR6HJD JR6PGB JR7TEQ K0CS K0EU K0FF K0FF K0GU K0IJL K0IR K0JUH K0KE K0QC K0RC K1KI K1NA K1ZM
K2BU K2KIR K3ANS K4CAD K4IUV K4JG K4KG K4ODL K4ODL K4PB K4VT K5NA K5NA K5PC K5VT K6AAW K6ANP K6FG K6JAJ K6KM
K6NA K6RK K6SSS K6SSS K6TQ K6VI K6VX K6VX K6XX K7CA K7DZ K7LFY K7OX K8EJ K8IP K9AJ K9FD K9JF K9KU K9RJ K9RJ
K9RS K9UWA KA6W KA9LTR KA9LTR KB4DMI KB5UL KC2KU KC7V KC8M KD0ZR KD6WW KD8V KD9SV KE7AJ KE7X KE9A KF0H KF4IX
KF6HI KF7E/5 KG0E KG4W KG4W KG6I KG6I KG6I KI3V/7 KI5PY KJ9I KK2I KL7H/W6 KM6SN KN0Z KO4WE KR9U KR9U KS1G/
5 KU2Q KV0Q KX4R KX4X KY0A N0BG N0DH/7 N0EJ N0JOW N0XA N2LT N3SL/0 N4AR N4CC N4CC N4CC N4CFL N4JJ N4KG N4RJ
N4VZ N4WW N5FG N5FY N5UR N5WA N6BT N6CMF N6CMF N6DX N6HL N6LU N6MM N6MYV N6ND N6RVZ N6SS N6TR N7EIJ N7ML
N7NG N7SC N8ATR NA0Y NA0Y NA5Q NC0W NC9P ND6G NE9Z NH2G NI0F NI5M NI5M NI5M NI6T NI6T NN7X NR0X NR0X NW6N
NX0I NZ4K OH1MA OH1NOR OH1OX OH3ES OK1DX/MM OK2HPY/MM RA0FA RA0FA RA9CMO RK9XWH RZ4HO RZ4WWB RZ9CO UA0ACG
UA0FDX UA0FZ UA4HAU UA4WEI UA4WGU UA9FQY/9 UA9XFY VE1ZZ VE3IY/7 VE5RA VE5RA VE6LB VE7BA VE7BS VE7BS VE7FPT
VE7RPT VE7SBO VE7ZZ VK4YB W0AH W0BYH W0CM W0CP W0MS W0OY W0VV W1ZE W2GVX W2MPK W2UE W2VJN W2VO W3AS W3BGN
W3LPL W3RCQ W3UM W4DR W4FOA W4HBK W4HBK W4MPY W4MYA W4NL W4NT W4PSJ W4VZB W5DD W5DM W5FIX W5OZI W5PLN W5UN
W5VSZ W6AJJ W6AJJ W6FSJ W6GO W6ISA W6JRY W6KUT W6OSP W6QUV W6QUV W6US W6YA W7HR W7IUV W7LGG W7LR W7LZP W7OM
W7RV W7TSQ W7XU W7ZRC W8CAR W8JGU W8UVZ W9CH W9EVI W9FRS W9MAF W9NGA W9XT W9YRZ W9YSX W9YSX W9ZR WA0GFS WA0PUJ
WA0TSH WA2AGO WA2UUK WA3EUL WA4CBF WA4CTA WA4SVO WA6HHQ WA6ZJC WA7HSD WA8SWM WA9YTQ WB2P WB2ULI WB4DBB WB6EQX
WB6WWW WB8QFB WB9GYU WC7N WD0AEK WJ6O WN5IJZ WN6W WQ5Y WS9V WS9V WT3Q WU6T WV5S WY0J WZ6Z

Did You Get In the AL7EL/KH9 160 Meter Log?

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The *Season* - Final Totals

• W4YDD, EW3CW, AB6ZV and KC7V 40 Meters • K6SSS 80 Meters • W7SE 160 Meters

SEASON FINAL - The *Low Band Monitor* totals for the 1995 / 1996 Season are presented here for your review. Participation was up significantly from our first two seasons. We greatly appreciate all of the interest from our subscribers as this awards program is a good way for the general readership to gage low band propagation.

In general, most low band enthusiasts were satisfied with activity, but a somewhat disappointed with the overall propagation conditions during the last seven months.

160 Meters - Walt, **W7SE,** of Wyoming, is a very popular man with European DXers. His **EA8EA** contact gives him position #55 on our top band listing.

Hard core top band DXers will not give up on this band this summer. Just remember to make arrangements to protect your transceiver from storm induced voltage spikes.

160 METER WORKED ALL CONTINENTS 1995-1996

NO.	CALL	DATE	AFRICA	ASIA	EUROPE	N. AMER.	OCEANIA	S. AMER.
1	**K1ZM**	09-01-95	ZS6UT	A45ZZ	G3PQA	WA3EUL	KH6CC	PY1BVY
2	**SM5EDX**	09-03-95	SM5DIC/9X	9K2MU	SM5BFJ	K1ZM	VK6VZ	CX4SS
3	**SM5BFJ**	09-03-95	ZS6UT	UA0ACG	SM5EDX	K1ZM	VK6VZ	CX4SS
4	**W8XD**	09-22-95	ZS6UT	4X4DK	IV3YYK	FM5BH	VK4YB	CX4SS
5	**AA6TT**	09-23-95	ZS6UT	JA7OEM	SM5EDX	VP5/PA3BBP	VK6ABL	CE0Z
6	**KV0Q**	09-23-95	ZS6UT	JA1HQT	JW5NM	N6CMF	VK5BC	CE0Z
7	**W0ZV**	09-28-95	ZS6UT	8Q7CW	LX1NO	VP5/PA3ERC	VK4YB	CE0Z
8	**W8AH**	10-03-95	ZS6UT	4X4NJ	G3PQA	YS1RRD	VK4YB	XQ8ABF
9	**W8UVZ**	10-05-95	ZS6UT	4X4NJ	G3PQA	AL7MX	ZL2SQ	XR0Y
10	**SM5AQD**	09-17-95	ZS6UT	RK9YWK	9H3PB	WT3Q	ZL2SQ	CX4SS
11	**NX0I**	10-05-95	ZS6UT	4X4NJ	EA3JE	FM5BH	VK6AS	XR0Y
12	**K8GG**	10-09-95	ZS6UT	4X4NJ	SV8ZS	AL7MX	VK4YB	XR0Y
13	**KX4R**	10-14-95	TR8XX	4X4NJ	G3PQA	FM5BH	KH6CC	XR0Y
14	**W1WAI**	10-22-95	ZS6UT	A45ZZ	ON4UN	FM5BH	VK3IO	CE0Z
15	**W2CRS**	10-26-95	ZS1JX	UA0KAG	JW5NM	NH6MG/TG5	VK6AS	CX4SS
16	**KC7V**	10-21-95	ZS1JX	JA0MVW	GW3YDX	KG4ZE	VK6HD	XR0Y
17	**N4KG**	10-01-95	ZS6UT	4X4NJ	SV8JE	VP5/PA3ERC	VK4YB	XR0Y
18	**K9FD**	10-24-95	ZS6UT	4X4NJ	SM5EDX	VP2VI	VK4YB	CE0Z
19	**N6DX**	10-29-95	EA8EA	UR8LV/R0	JW5NM	VO2WL	VK6ABL	CE0Z
20	**W0CM**	10-30-95	ZS6UT	JA7NI	OM6KW	TO5M	VK6AS	XR0Y
21	**K0CS**	11-04-95	ZS1JX	JH0ZHQ	SM4CAN	FP/N9AU	VK4YB	8R1K
22	**K0HA**	11-10-95	TR8XX	UR8LV/R0	OY9JD	FP/K9GS	WR6R/KH6	PY0FF
23	**AB0X**	11-26-95	EA8EA	JA7NI	ON4UN	KG4ZE	3D2HI	XR0Y
24	**OH5VT**	11-26-95	EA8EA	A45ZZ	OH2BU/MV1	FM5BH	VK6HD	PY0FF
25	**NI6T**	11-28-95	EA8EA	7M3HLQ	SM4HCM	XE2/WA7UQV	VK6LW	XR0Y
26	**W4JVN**	11-25-95	EA8PP	4X4NJ	OH1XX	FM5BH	KH6CC	8R1K
27	**KF2O**	12-08-95	ZS6UT	A71CW	9A1KDE	CY0TP	KH6CC	XR0Y
28	**WA0GFS**	12-10-95	ZS6UT	JA1HQT	OH0MEP	OX3XR	KH6CC	CE0Z
29	**N4QQ**	11-25-95	EA8EA	4X4NJ	G3LNS	FM5BH	KH6CC	CX4SS
30	**FM5BH**	11-25-95	ZD8Z	4X4NJ	G3FPQ	J67SL	KH6CC	4M5X
31	**W7LR**	10-05-95	ZS6UT	JA1HQT	SP5GRM	KL7Y	VK4YB	CE0 X
32	**K3ND**	12-17-95	SU2MT	A71CW	OY9JD	CY0TP	KH6CC	XR0Y
33	**K7LFY**	12-25-95	EA8PP	JA0MVW	G3LNS	TI2CF	KH6CC	PY2SAI
34	**KA7SCX**	12-25-95	EA8PP	JA3ZOH	GM3POI	KG4MN	KH6CC	YV1OB
35	**W9CH**	10-05-95	ZS6UT	4X4NJ	JW5NM	WX7G	VK4YB	XR0Y
36	**K3SME**	01-08-96	EA9EU	JA1JRK	OH0MEP	KL7Y	KH6CC	CE0Z
37	**K6ANP**	01-13-96	ZS6UT	JR5TAQ	G3LNS	AL7MX	AH6AZ	HC8N
38	**N6SS**	11-23-95	EA8EA	UA0KAG	OM6KW	V26B	KH6CC	PJ9B
39	**W6RJ**	01-06-96	ZS1JX	JQ1SUO/JD1	DL1RWN	W0ZV	T32BB	PY0FZ
40	**K4IBP**	12-28-95	SU2MT	TA2BK	1A0KM	AL7MX	KH6CC	HC8N
41	**AB6ZV**	01-28-96	EA8PP	JH5FXP	EI8H	N7ML	V73JT	P40WA
42	**WO1P**	01-27-96	S79MX	4X4NJ	GJ3YHU	OX3XR	KH6CC	CX4SS
43	**AJ6T**	01-08-96	CT3/DL3KUD	JQ1SUO/JD1	CT1AOZ	HI3/N0ZR	VK6APZ	8R1K
44	**W2VO**	09-25-95	ZS6UT	4X4NJ	SV8ZS	FM5BH	VK4YB	CX4SS
45	**K9IT**	02-16-96	EA8EA	4X4NJ	HA8BE	KG4ZE	KH6CC	9Y4H
46	**K2ZJ**	02-18-96	EA8EA	JA1JRK	ZB2FK	KP2/KE2VB	ZK1DI	YV1NV
47	**K0IJL**	02-17-96	EA8EA	JA3ONB	SM5EDX	FP/N9AU	KH9/AL7EL	8R1K
48	**AB6LJ**	03-06-96	C56CW	JA7YAA	GM3POI	FM5BH	KH4/NH6D	HC8N
49	**WA0PUJ**	11-28-95	ZS6UT	4X4NJ	S58A	KG4IJ	VK2FPQ	XR0Y
50	**NO0Y**	03-09-96	C56CW	JA3ZOH	SM4HCM	KL7Y	KH6CC	CE0Z
51	**N9AU**	11-24-95	ZS6UT	UR8LV/R0	G3ZEM	KL7WO/W6	KH6CC	XR0Y
52	**WW1O**	01-27-96	S79MX	JE7RJS	GI0KOW	FP/N9AU	KH6CC	LU6Z
53	**K0FF**	02-05-96	C56CW	JA3AAW	DK8ZB	VP5/JJ1QEH	AL7EL/KH9	LU6Z
54	**K6SSS**	03-08-96	C56CW	UA0KAG	EA3VY	KL7Y	KH6CC	XR0Y
55	**W7SE**	02-16-96	EA8EA	JA3ZOH	F6EXV	YS1ZV	KH6CC	WX9E/YV5

80 Meters - Domenico, **I8UDB**, captures the 80 meter seasonal countries worked high total with an amazing 223 DXCC Countries on 80 meters.

Tom, **N4KG,** always a top contender, closes fast and catches Bill, **K6GNX** for the #2 position with 195 Countries worked on 80 meters this season.

New 80 Meter Qualifier:

- Fred, **K6SSS**, a veteran 80 meter DXer from California checks in this season in position #20 with a fine 136 total including **JT1FAY**, **XU1FL** and **XZ1A.**

80 METER WORKED 100 COUNTRIES 1995 - 1996

NO.	CALL	DATE	COUNTRY	STATE	SUBMITTED	LATEST
1	N4KG	11-07-95	U.S.A.	ALABAMA	100	195
2	W6RJ	11-12-95	U.S.A.	CALIFORNIA	103	175
3	I8UDB	10-22-95	ITALY	POZZUOLI	100	223
4	K6GNX	11-20-95	U.S.A.	NEVADA	100	188
5	AB6LJ	11-23-95	U.S.A.	CALIFORNIA	100	159
6	WD4KXB	11-26-95	U.S.A.	VIRGINIA	104	148
7	OH5VT	11-26-95	FINLAND	KLAUKKALA	100	126
8	AB6ZV	12-01-95	U.S.A.	OREGON	103	167
9	WA0GFS	01-05-96	U.S.A.	IOWA	102	134
10	JH1GNU	01-05-96	JAPAN	HIRATSUKA	103	112
11	VA3NN	01-16-96	CANADA	ONTARIO	100	112
12	KF2O	01-17-96	U.S.A.	NEW YORK	106	106
13	K0DEQ	03-02-96	U.S.A.	MISSOURI	100	100
14	KD3FC	03-02-96	U.S.A.	PENNSYLVANIA	110	113
15	K3ND	03-03-96	U.S.A.	PENNSYLVANIA	100	106
16	W8AH	03-20-96	U.S.A.	WEST VIRGINIA	140	143
17	N9AU	03-21-96	U.S.A.	WISCONSIN	100	100
18	JH1BBT	03-14-96	JAPAN	SAITAMA	101	101
19	N6DX	03-28-96	U.S.A.	CALIFORNIA	100	100
20	K6SSS	03-26-96	U.S.A.	CALIFORNIA	136	136

40 Meters - If Charlotte, **KZ4V** thought that Tom, **N4KG** would quietly leave the 40 meter band, she was wrong! What a battle, with Charlotte, **KZ4V** prevailing with an amazing 240 DXCC Countries worked this season. Tom, **N4KG** managed an amazing 224 DXCC Countries to earn another #2 Position.

Look at the seasonal totals for Gus, **K4SXT** at 191 and Bill, **K0DEQ** at 181—simply awsome.

New 40 Meter Qualifiers:

- Paul, **W4YDD**, using 400 watts and a dipole, makes a late run in the month of March and checks in at position #10 from South Carolina.
- Alex, **EW3CW**, from Belarus, on a recommendation from **K0DEQ**, sends in a most exotic entry and captures position #11 on our 40 meter listing.
- Rich, **AB6ZV**, from Oregon, takes a break from 80 meters and grabs the #12 position with 161 countries. This entry also completes the 40-80-160 meter triple, joining **N4KG** and **W8AH**.
- Mike, **KC7V**, Arizona's best CW operator, submits a last minute entry and captures position #13 on our 40 meter listing.

40 METER WORKED 150 COUNTRIES 1995 - 1996

NO.	CALL	DATE	COUNTRY	STATE	SUBMITTED	LATEST
1	KZ4V	10-17-95	U.S.A.	TENNESSEE	150	240
2	K0DEQ	11-09-95	U.S.A.	MISSOURI	150	181
3	N4KG	11-14-95	U.S.A.	ALABAMA	151	224
4	WA0I	11-23-95	U.S.A.	MISSOURI	150	162
5	WD0GLF	12-02-95	U.S.A.	MISSOURI	151	151
6	K4SXT	11-26-95	U.S.A.	VIRGINIA	150	191
7	N9AU	02-25-96	U.S.A.	WISCONSIN	151	156
8	W8AH	03-20-96	U.S.A.	WEST VIRGINIA	164	166
9	K7LFY	03-22-96	U.S.A.	OKLAHOMA	153	153
10	W4YDD	03-31-96	U.S.A.	SOUTH CAROLINA	153	153
11	EW3CW	03-13-96	BELARUS	KOBRIN	151	151
12	AB6ZV	03-07-96	U.S.A.	OREGON	161	165
13	KC7V	02-12-96	U.S.A.	ARIZONA	151	151

We will review our awards program next month from a propagation perspective comparing the past season's results with those of our first two.

Thanks to everyone who participated—you have helped us all better target our own individual efforts.

Lance:

The conditions on 160m has been very excellent during January. I could work many East Coast stations in the US from our club station JH0ZHQ.The best signal on at that time from the East Coast was W3RCQ whose signal was a 579.When I heard his signal at first, I guessed that his QTH was California.

I have never heard such a strong signal from East Coast on 160m. I want to work more US stations during good conditions. By the way I am challenging 80m 100 countries now. I already worked 95 countries and I hope I will complete 100 soon.

K. Makidai, JH1BBT

K.

Most of our readers have made at least one JH0ZHQ contact on 160 meters this season—a true beacon. You have made W3RCQ very famous. Congratulations on the very successful 80 meter effort; a very tough band this season.

Lance:

Was playing in the CQ 160 Meter CW contest this weekend. When I say playing, I know that I will never win a trophy, but enjoy the experience and fun of contesting. You have been shaking the bushes about some type of handicap system. I think that you are right on.

Now some would take me as a "whiner" and I am not, I don't care who wins from the US , I just want a level playing field. On both Fri. and Sat. night, both the Left and Right coast boys were working into their respective "Killing Fields" with ease. From the black hole of the Mid-West this DX was not audible. At least not here.

Now, I am not complaining and on each coast, we have some world class operators and stations. After reading John Dorr, K1AR's article in Jan. 96 CQ it is obvious that they have a great advantage on the Right coast on their shot into Europe and Africa. John is a great operator and was at a world class station. I would like to put him here in the black hole for a full season.

The point is that there needs to be some type of easy to manage handicap system in place to level the playing field. I don't think it will happen when those who make the rules for the US sponsored contests live on the coast. At least they are going to have a "Tribander" category in the future. Keep up the fight, you have a great idea!

Tom, KC0EI

Tom:

I have been studying vacant land prices in the North East at the local Newsland store. If I pull this off I will give you a call. Maine looks good for a time share deal in the winter, but October and November will take huge amounts of money.

Lance:

Let me clarify the relation between two call signs. JH1GNU is my own call and I use it at my home QTH which is about 35mi. SW of Tokyo. JH0ZHQ is a club station and run by me, Kou, JH1BBT and some other friends, and whose title is *Barbecue Enthusiasts Amateur Radio Club.*

We put up the triband beam at JH0ZHQ. The JH0ZHQ place is almost completely closed because of snow. The QTH is up 5400 ft in the mountain area in Nagano, which is about 100mi NW of Tokyo. This is a fun place to get together with BBQ friends and do lots of antenna work.

I usually do some experiment in half scale at JH1GNU place and double the size at JH0ZHQ.

The contest result is done at JH1GNU place with running 300 watts output where I just use the fishing vertical which, as you know, a 27 ft. carbon fiber fishing pole is used as a 60% size vertical element with a pair of full size radials, and it is an elevated radial system.

This is my home QTH's main antenna which has brought me over 200 DXCC countries in 4 years on 80m.

Shigeru, JH1GNU

Shigeru:

We all thank you for your insights on the 80 meter fishing pole antenna, one of the more provocative articles to appear in the Low Band Monitor.

The JH0ZHQ location would rival most QTH's in the Rocky Mountains—simply breathtaking.

Lance:

Those who want a seasonal 160 meter countries worked award are not forward-thinking of the consequences. I still have been unable to work 3B8, who was on and readable every night for weeks - a few years back, 5B4OG, etc. etc. due to others cleaning my clock. This award proposal would only make the situation worse. We must discourage not encourage repeated working of rare stations by those who don't need them for a new one.

Dave, KJ9I

Dave:

The Low Band Monitor 160 Meter WAC Award was set up initially to eliminate this type of operation during the low band season. There are two opinions about the 160 award among our readers that will finally be settled in a democratic manner by voting in our survey.

Lance:

Until the sponsors of the contests have the guts to advertise the DX Window and stick to it and disqualify violators of the DX Window, the abuse will continue. History indicates that the ones that park in the window and do their thing — win. Again the ball is in the court of those who make the rules, either make the rules and enforce them, or, do not have the rules.

On 160 meter DXing—from one who mainly listens from a small city lot—please inform the folks who are kind enough to go to various DX spots please, please QRS—it is not necessary on 160 to go 30 zillion wpm—you are not running a contest and even if you were, it would take unneeded time to figure out who you are, let alone work you at that speed given the QRN , QSB and QRM. This is not a beef, but rather a suggestion for what it may be worth.

John, W8WEJ

John:

I think that your comment about code speed merits discussion. I have noticed that many of the serious 160 operators still use a straight key! I bet that a slow 18 wpm would be appropriate during really tough top band conditions most of the time. My experiments indicate 18 - 22 wpm works best for me.

The DX window discussion we had a few months ago gave me a headache. When I get set up in Maine in a few years I will also give you a call.

LOW BAND MONITOR POWER SPOTS - APRIL 1996

TNX: N8BJQ - K1ZM - W7LR - W8AH - K7LFY - K6SSS

80 METERS

3505.1	3V8BB	13-Apr-96	0506Z
3508.0	9Q5MRC	12-Apr-96	0229Z
3799.7	5X4F	12-Apr-96	0327Z
3796.0	6W6/K3IPK	12-Apr-96	0350Z
3792.8	I0IJ/SV8	12-Apr-96	0410Z
3502.9	ZD7VJ	12-Apr-96	0447Z
3507.1	EM1KA	12-Apr-96	0501Z
3791.2	3V8BB	12-Apr-96	2154Z
3508.7	3V8BB	12-Apr-96	2233Z
3788.0	9G1YR	12-Apr-96	2251Z
3795.7	FP5EJ	12-Apr-96	2318Z
3510.3	3V8BB	12-Apr-96	2346Z
3504.2	UN7TX	11-Apr-96	0013Z
3504.8	UA2BD	11-Apr-96	0049Z
3503.0	EM1KA	11-Apr-96	0050Z
3510.5	EW7LO	11-Apr-96	0052Z
3505.0	GD/AI5P	11-Apr-96	0344Z
3799.0	3A2MD	11-Apr-96	0359Z
3797.0	CE8EIO	11-Apr-96	1056Z
3793.0	I0IJ/SV8	11-Apr-96	2048Z
3799.7	C31SD	11-Apr-96	2106Z
3800.0	A61AN	11-Apr-96	2249Z
3790.0	C53HG	11-Apr-96	2254Z
3796.4	C94AI	11-Apr-96	2302Z
3795.0	SV5DDR	10-Apr-96	0045Z
3503.5	UA2BD	10-Apr-96	0218Z
3797.1	3V8BB	10-Apr-96	0219Z
3501.0	EMIKA	10-Apr-96	0252Z
3793.0	SV2ASP/A	10-Apr-96	0448Z
3799.9	GD4PTV	10-Apr-96	0554Z
3518.0	UA9CQM	10-Apr-96	2055Z
3502.9	ZD7VJ	10-Apr-96	2333Z
3794.9	SV5DDR	9-Apr-96	0242Z
3504.9	ZD7VJ	9-Apr-96	0259Z
3515.1	SV5DZX	9-Apr-96	0337Z
3794.8	T70A	9-Apr-96	0339Z
3782.0	VE2RP	9-Apr-96	0422Z
3506.0	9J2BO	9-Apr-96	0423Z
3794.9	3A2MD	9-Apr-96	0426Z
3502.9	ZD8VJ	9-Apr-96	0458Z
3508.1	TK/DJ8QP/P	9-Apr-96	2143Z
3508.1	TK/DJ8QP/P	9-Apr-96	2214Z
3795.0	A71DX	9-Apr-96	2247Z
3795.0	SV5DDR	9-Apr-96	2324Z
3505.9	EW3LB	8-Apr-96	0255Z
3794.8	J3K	8-Apr-96	0302Z
3795.1	8R1AK	8-Apr-96	0559Z
3795.0	T70A	8-Apr-96	2200Z
3782.0	SV2ASP/A	8-Apr-96	2217Z
3800.0	9K2MU	8-Apr-96	2225Z
3798.2	3V8BB	8-Apr-96	2228Z
3799.8	AP2N	8-Apr-96	2248Z
3799.8	A92BE	8-Apr-96	2251Z
3800.0	T70A	8-Apr-96	2354Z
3800.0	9K2MU	8-Apr-96	2356Z
3796.0	FR5DX	7-Apr-96	0140Z
3503.5	EW7LO	7-Apr-96	0402Z
3507.6	CP8XA	7-Apr-96	0420Z
3784.7	Z37FAD	7-Apr-96	0424Z
3794.9	GD4PTV	7-Apr-96	0603Z
3795.0	C21RK	7-Apr-96	1030Z
3799.6	AP2N	7-Apr-96	1654Z
3799.9	AP2TM	7-Apr-96	1952Z
3790.0	9H1PF	7-Apr-96	2006Z
3799.8	A61AM	7-Apr-96	2040Z
3797.2	9H1PF	7-Apr-96	2046Z
3799.9	A71AN	7-Apr-96	2053Z
3799.9	A71BY	7-Apr-96	2100Z
3799.8	TR8IG	7-Apr-96	2303Z
3799.8	5N0T	7-Apr-96	2304Z
3790.0	FR5DX	6-Apr-96	0230Z
3505.3	J56CK	5-Apr-96	0135Z
3504.8	4Z4KX	5-Apr-96	0243Z
3503.9	3V8BB	5-Apr-96	0300Z
3502.9	J3/W2HRX	4-Apr-96	0202Z
3799.7	TA2DS	4-Apr-96	0205Z
3799.7	9K2MU	4-Apr-96	0205Z
3501.1	GU/DL6KR	4-Apr-96	0211Z
3791.6	D44BC	4-Apr-96	0332Z
3797.0	3V8BB	4-Apr-96	0358Z
3504.0	GD/AI5P	4-Apr-96	0406Z
3799.0	HL5NDQ	4-Apr-96	1307Z
3510.8	HL2CFY	4-Apr-96	1318Z
3505.4	J56CK	4-Apr-96	2342Z
3799.8	JY4MB	3-Apr-96	0338Z
3800.0	ZA1MH	3-Apr-96	0417Z
3503.6	GU/DF1AL	3-Apr-96	0532Z
3795.0	EI6S	3-Apr-96	0536Z
3506.8	EA7AIN	3-Apr-96	0638Z
3504.2	EA1DAV	3-Apr-96	0646Z
3795.3	C21RK	3-Apr-96	1115Z
3502.8	3V8BB	2-Apr-96	0228Z
3787.9	J56DY	1-Apr-96	0125Z
3508.0	4U1UN	1-Apr-96	2322Z
3503.1	ZD7VJ	1-Apr-96	2325Z

40 METERS

7006.8	F5PFP	29-Apr-96	0015Z
7001.0	Z32XA	28-Apr-96	0147Z
7008.4	HB9XC	28-Apr-96	0159Z
7007.3	FR5DD	28-Apr-96	0258Z
7016.5	VK0WH	28-Apr-96	0312Z
7012.5	ES1WN	28-Apr-96	0340Z
7029.8	OH0/K8MN	28-Apr-96	0353Z
7009.0	VK0WH	28-Apr-96	0630Z
7190.0	3D2RW	28-Apr-96	0640Z
7011.4	C21/JA1WPX	28-Apr-96	1026Z
7008.0	9M2JJ	28-Apr-96	1059Z
7012.0	BV7FD	28-Apr-96	1155Z
7009.8	3D2RW	28-Apr-96	1208Z
7001.2	FP5EJ	27-Apr-96	0101Z
7006.2	4N4L	27-Apr-96	0106Z
7001.1	ER1OO	27-Apr-96	0143Z
7003.0	UN7TX	27-Apr-96	0202Z
7002.9	ZP9IU	27-Apr-96	0215Z
7007.3	EM1KA	27-Apr-96	0219Z
7195.0	LU9MBI	27-Apr-96	0346Z
7008.0	EU7SA	27-Apr-96	0351Z
7012.3	5R8EN	27-Apr-96	0416Z
7004.2	YK1AO	27-Apr-96	0419Z
7007.2	EM1KA	27-Apr-96	0419Z
7010.0	ZK1XB	27-Apr-96	0424Z
7093.0	V51E	27-Apr-96	0538Z
7007.5	OA4DBP	27-Apr-96	0549Z
7024.7	TR8BAR	27-Apr-96	0552Z
7010.0	VI9NS	27-Apr-96	0624Z
7008.7	C21/JA1WPX	27-Apr-96	1028Z
7002.5	RW0MM	27-Apr-96	1123ZZ
7011.0	BV0NTS	27-Apr-96	1144Z
7001.0	NH2G	27-Apr-96	1245Z
7008.0	3B8FQ	27-Apr-96	1249Z
7044.7	CN8ET	27-Apr-96	2027Z
7074.1	ES1WW	27-Apr-96	2028Z
7001.5	S92SS	27-Apr-96	2237Z
7006.8	9K5/YO9HP	26-Apr-96	0014Z
7005.3	JY1	26-Apr-96	0021Z
7009.0	EM10C	26-Apr-96	0025Z
7002.0	ZA1AJ	26-Apr-96	0032Z
7006.8	YO3ZA	26-Apr-96	0059Z
7005.0	9J2HZ	26-Apr-96	0414Z
7004.9	9J2SZ	26-Apr-96	0441Z
7000.6	ZS4TX	26-Apr-96	0452Z
7002.0	ZK1XB	26-Apr-96	0452Z
7190.0	VK9NS	26-Apr-96	0702Z
7006.0	PY0TI	26-Apr-96	2144Z
7057.8	PY0TI	25-Apr-96	2321Z
7003.8	3DA0CA	24-Apr-96	0305Z
7007.0	ZK1XB	24-Apr-96	0513Z
7003.3	BV4ME	24-Apr-96	1053Z
7005.0	XQ0YAF	24-Apr-96	1113Z
7042.0	5N9NJM	24-Apr-96	2118Z
7003.7	9K5/YO9HP	24-Apr-96	2343Z
7006.8	5X4F	24-Apr-96	2350Z
7007.9	3V8BB	23-Apr-96	0153Z
7006.0	EM1KA	23-Apr-96	0212Z
7012.3	5R8EN	22-Apr-96	0327Z
7001.8	ZD8Z	21-Apr-96	0020Z
7005.9	TR8BAR	21-Apr-96	2202Z
7006.1	3V8BB	20-Apr-96	0258Z
7004.4	HS0/7L1MFS	19-Apr-96	1420Z
7050.0	9N1HP	19-Apr-96	1552Z
7008.6	T98BBF	19-Apr-96	1831Z
7003.8	VU2MSY	19-Apr-96	1834Z
7004.8	EM1KA	18-Apr-96	0352Z
7007.0	ZK1FAN	18-Apr-96	1003Z
7004.6	V73NN	18-Apr-96	1020Z
7004.5	V73NN	18-Apr-96	1026Z
7009.0	VK0WH	18-Apr-96	1038Z
7007.2	ZK1FAN	18-Apr-96	1200Z
7070.0	3A/DJ5MN	18-Apr-96	1351Z
7010.2	BV6GO	18-Apr-96	1355Z
7006.9	9M2JJ	18-Apr-96	1407Z
7003.0	A71EZ	18-Apr-96	1909Z
7004.1	HL1DH	18-Apr-96	1912Z
7005.0	A61AF	18-Apr-96	1914Z
7044.4	5N2SYT	18-Apr-96	1921Z
7044.5	5N2SYT	18-Apr-96	1928Z
7044.5	TT8BP	18-Apr-96	1937Z
7097.0	ZA1AJ	18-Apr-96	2013Z
7003.4	9A1HCD	18-Apr-96	2026Z
7044.5	TT8BP	18-Apr-96	2045Z
7004.7	T92A	18-Apr-96	2055Z
7049.5	A92FZ	18-Apr-96	2056Z
7004.7	T92A	18-Apr-96	2118Z
7010.6	9K5/YO9HP	18-Apr-96	2118Z
7049.2	A92FZ	18-Apr-96	2224Z
7006.3	FR5DD	17-Apr-96	0032Z
7005.2	FP5EJ	17-Apr-96	0101Z
7005.4	VU2AUG	17-Apr-96	0142Z
7007.2	YK1AO	17-Apr-96	0403Z
7066.6	YN8ZDK	16-Apr-96	0627Z
7004.1	ZK1FAN	16-Apr-96	0630Z
7009.2	VK0WH	16-Apr-96	1032Z
7006.8	V73GT	16-Apr-96	1111Z
7002.1	FK8GJ	16-Apr-96	1113Z
7007.0	9M2JJ	16-Apr-96	1302Z
7007.9	BV2CM	16-Apr-96	1311Z
7011.0	BZ4RA	16-Apr-96	1315Z
7007.5	VU2TES	16-Apr-96	1837Z
7002.2	A92GE	16-Apr-96	1839Z
7049.0	GD/AI5P	16-Apr-96	1855Z
7064.7	4S7BRG	16-Apr-96	1855Z
7061.7	C94AI	16-Apr-96	2052Z
7004.0	A71EZ	16-Apr-96	2114Z
7042.5	7P8CI	16-Apr-96	2127Z
7009.6	C53HG	16-Apr-96	2236Z
7049.0	OD5NJ	16-Apr-96	2317Z
7011.5	HS7ECI	15-Apr-96	1229Z
7009.3	C53HG	15-Apr-96	2206Z
7091.3	TA1AL	15-Apr-96	2211Z
7055.0	EU3FT	15-Apr-96	2216Z
7048.0	Z32MX	15-Apr-96	2218Z
7006.1	YK1AO	15-Apr-96	2239Z
7007.5	9M2JJ	14-Apr-96	1255Z
7012.7	VR2GY	14-Apr-96	1518Z
7045.0	TR8IG	14-Apr-96	1933Z
7007.7	9N1HP	14-Apr-96	1952Z
7004.8	SV5/IV0HS	13-Apr-96	0357Z
7004.9	FP1SH	13-Apr-96	0415Z
7003.9	3DA0CA	13-Apr-96	0443Z
7044.5	5N2BII	13-Apr-96	1816Z
7010.2	T91EAM	13-Apr-96	1925Z
7003.0	ZK1FAN	12-Apr-96	0528Z
7195.0	C21NJ	12-Apr-96	0603ZZ
7007.0	XU6WV	12-Apr-96	1255Z
7014.0	VR2GY	12-Apr-96	1646Z
7007.0	T99W	12-Apr-96	1759Z
7004.6	UN7TX	12-Apr-96	1801Z
7045.0	5N9SAI	12-Apr-96	2130Z
7075.0	I0IJ/SV8	12-Apr-96	2141Z
7003.8	YB7/G0SMC	12-Apr-96	2146Z

LOW BAND MONITOR POWER SPOTS - APRIL 1996

TNX: N8BJQ - K1ZM - W7LR - W8AH - K7LFY - K6SSS

160 METERS

1829.5	ON1CZ	27-Apr-96	0052Z
1838.3	OD5NJ	27-Apr-96	0108Z
1838.3	4L4KK	27-Apr-96	0139Z
1838.3	PY3CEJ	27-Apr-96	0147Z
1840.1	XQ8ABF	27-Apr-96	0151Z
1844.9	PY3CEJ	27-Apr-96	0209Z
1840.0	XQ8ABF	27-Apr-96	0214Z
1845.0	PY5CEJ	27-Apr-96	0248Z
1841.0	LU1FA	27-Apr-96	0301Z
1832.5	PA0LEG	27-Apr-96	0310Z
1831.2	SV8ZS	27-Apr-96	0328Z
1832.8	IT9ZGY	27-Apr-96	0330Z
1840.0	XQ8ABF	27-Apr-96	0332Z
1842.6	CX2CB	27-Apr-96	0334Z
1840.0	XQ8ABF	27-Apr-96	0343Z
1832.8	SV8JE	27-Apr-96	0349Z
1831.7	IV3PRK	27-Apr-96	0418Z
1840.2	CX2CB	27-Apr-96	0456Z
1844.3	XQ8ABF	27-Apr-96	0501Z
1815.3	HB9MM	27-Apr-96	2238Z
1832.0	HA8BE	26-Apr-96	0300Z
1827.2	SV8ZS	26-Apr-96	0323Z
1834.7	SV8JE	26-Apr-96	0339Z
1830.0	CX4SS	26-Apr-96	0430Z
1840.1	KP4AAQ	25-Apr-96	0122Z
1830.0	CT1DMK	25-Apr-96	0344Z
1840.0	VK6APZ	24-Apr-96	2019Z
1824.0	PJ5AA	23-Apr-96	0304Z
1833.0	PY5CC	22-Apr-96	0112Z
1840.0	VK3EW	22-Apr-96	1734Z
1840.0	VK6APZ	22-Apr-96	1818Z
1844.0	IY0GA	20-Apr-96	1828Z
1829.0	3A/DJ5MN	20-Apr-96	2009Z
1836.3	UT0MY	19-Apr-96	0003Z
1832.8	A45ZZ	19-Apr-96	0140Z
1850.0	GB60BBC	19-Apr-96	1924Z
1842.0	CU2CE	18-Apr-96	2301Z
1847.0	SV8JE	18-Apr-96	2301Z
1830.5	IT9ZGY	17-Apr-96	0412Z
1829.0	UA9UFO	17-Apr-96	2219Z
1840.0	T93M	17-Apr-96	2220Z
1840.0	UA9YMT	17-Apr-96	2220Z
1850.0	GI3OQR	17-Apr-96	2227Z
1835.2	SP2WET	17-Apr-96	2235Z
1824.0	5X4F	17-Apr-96	2318Z
1833.0	4S7RPG	17-Apr-96	2343Z
1828.0	JX2GV	16-Apr-96	2238Z
1838.0	EM1KA	15-Apr-96	0352Z
1830.1	ZS6UT	15-Apr-96	0357Z
1829.0	JX2GV	15-Apr-96	2225Z
1833.4	EA8CN	14-Apr-96	2240Z
1842.0	UU4JDX	14-Apr-96	2240Z
1842.8	7X2AB	13-Apr-96	0132Z
1826.0	HB9ATA	13-Apr-96	0231Z
1824.0	3V8BB	13-Apr-96	0259Z
1840.0	D44BC	13-Apr-96	0316Z
1835.0	SV8ZS	13-Apr-96	0344Z
1827.0	HB9ATA	13-Apr-96	0448Z
1840.0	VK3FBR	13-Apr-96	0936Z
1834.0	UA9CI	13-Apr-96	1844Z
1829.0	UA9UFO	13-Apr-96	1848Z
1840.0	SV2ASP/A	13-Apr-96	1914Z
1827.0	ZD7VJ	12-Apr-96	0209Z
1830.9	RA4UA	12-Apr-96	0209Z
1835.6	6W/K3IP	12-Apr-96	0238Z
1839.0	UX0ZZ	12-Apr-96	0238Z
1835.6	6W6/K3IPK	12-Apr-96	0251Z
1831.0	EM1KA	12-Apr-96	0346Z
1824.0	3V8BB	12-Apr-96	0443Z
1832.5	3V8BB	12-Apr-96	2132Z
1847.3	UA9YMT	12-Apr-96	2328Z
1826.9	ZD7VJ	11-Apr-96	0245Z
1832.0	EM1KA	11-Apr-96	0258Z
1833.4	UA2BD	11-Apr-96	0300Z
1840.0	J3K	11-Apr-96	0302Z
1832.3	EM1KA	11-Apr-96	0310Z
1825.1	HK7/SM5HV	11-Apr-96	0315Z

160 METERS

1831.4	HA8BE	11-Apr-96	0323Z
1830.3	ON4ACG	11-Apr-96	0344Z
1840.0	D44BC	11-Apr-96	0344Z
1827.5	SV8ZS	11-Apr-96	0348Z
1822.4	OZ7YY	11-Apr-96	0354Z
1832.8	T99T	11-Apr-96	0407Z
1840.0	D44BC	11-Apr-96	0407Z
1829.4	FM5BH	11-Apr-96	0941Z
1830.5	T99T	11-Apr-96	2050Z
1826.7	ZD7VJ	10-Apr-96	0009Z
1827.9	EI6IF	10-Apr-96	0035Z
1826.8	ZD7VJ	10-Apr-96	0040Z
1830.9	OM5ZM	10-Apr-96	0043Z
1831.0	EM1KA	10-Apr-96	0205Z
1842.7	T12SW	10-Apr-96	0259Z
1831.0	EM1KA	10-Apr-96	0303Z
1824.0	3V8BB	10-Apr-96	0311Z
1833.4	HA8BE	10-Apr-96	0322Z
1828.0	SV8ZC	10-Apr-96	0325Z
1830.7	IT9INO	10-Apr-96	0344Z
1828.2	CO2EG	10-Apr-96	0347Z
1827.0	SV8ZS	10-Apr-96	0357Z
1831.8	VK3ZL	10-Apr-96	1126Z
1829.1	TK/DJ8QP	10-Apr-96	2125Z
1843.0	OD5NJ	10-Apr-96	2335Z
1827.0	ZD7VJ	9-Apr-96	0017Z
1845.0	SV1CIB	9-Apr-96	0018Z
1845.0	4L4KK	9-Apr-96	0020Z
1826.1	5X4F	9-Apr-96	0022Z
1824.0	3V8BB	9-Apr-96	0036Z
1830.0	GW4VEQ	9-Apr-96	0042Z
1827.1	ZD7VJ	9-Apr-96	0059Z
1826.0	5X4F	9-Apr-96	0103Z
1823.8	3V8BB	9-Apr-96	0132Z
1827.8	CO2EG	9-Apr-96	0235Z
1823.3	CX4SS	9-Apr-96	0236Z
1835.5	UX0ZZ	9-Apr-96	0259Z
1824.0	SV8ZC	9-Apr-96	0341Z
1833.1	EM1KA	9-Apr-96	0354Z
1826.4	OE6BMG	9-Apr-96	0356Z
1824.7	3V8BB	9-Apr-96	0358Z
1841.1	T70A	9-Apr-96	0410Z
1831.1	IT9ZGY	9-Apr-96	0422Z
1832.9	EM1KA	9-Apr-96	0433Z
1824.2	3V8BB	9-Apr-96	0446Z
1841.0	TT8BP	9-Apr-96	2055Z
1830.0	UA0ACG	9-Apr-96	2242Z
1827.0	ZD7VJ	9-Apr-96	2359Z
1840.0	GI3OQR	8-Apr-96	0019Z
1835.1	9A2TW	8-Apr-96	0025Z
1840.0	KP4AAQ	8-Apr-96	0038Z
1832.9	HA8BE	8-Apr-96	0040Z
1831.8	FG5BG	8-Apr-96	0157Z
1835.3	G3PQR	8-Apr-96	0210Z
1831.0	GW4VEQ	8-Apr-96	0212Z
1830.4	DL3DXX	8-Apr-96	0213Z
1826.2	HB9ATA	8-Apr-96	0236Z
1842.0	FS5PL	8-Apr-96	0315Z
1840.0	D44BC	8-Apr-96	0316Z
1838.0	T70A	8-Apr-96	2126Z
1831.0	EW10A	8-Apr-96	2209Z
1843.0	3A2HB	8-Apr-96	2230Z
1847.0	4L4KK	8-Apr-96	2313Z
1826.0	5X4F	8-Apr-96	2354Z
1824.0	3V8BB	7-Apr-96	0004Z
1834.0	TT8BP	7-Apr-96	0011Z
1834.0	J56DY	7-Apr-96	0024Z
1835.7	9G1MR	7-Apr-96	0051Z
1823.3	GU/DF1AL	7-Apr-96	0115Z
1830.5	S92SS	7-Apr-96	0210Z
1831.0	HA8BE	7-Apr-96	0315Z
1825.0	FS5PL	7-Apr-96	0318Z
1827.4	SV8ZS	7-Apr-96	0343Z
1825.0	FG5BG	7-Apr-96	0346Z
1831.1	IT9INO	7-Apr-96	0355Z
1831.1	EM1KA	7-Apr-96	0409Z
1824.3	GB2RN	7-Apr-96	2220Z

160 METERS

1833.2	HA8BE	7-Apr-96	2329Z
1848.0	9G1MR	7-Apr-96	2349Z
1822.9	GU/DL6KR	6-Apr-96	0108Z
1827.0	ZD7VJ	6-Apr-96	0111Z
1824.3	3V8BB	6-Apr-96	0220Z
1832.0	HB9ATA	6-Apr-96	0338Z
1822.9	GU/DL6KR	6-Apr-96	0434Z
1824.2	3V8BB	5-Apr-96	0027Z
1823.0	GU/DF1AL	5-Apr-96	0129Z
1837.0	RA6AX	5-Apr-96	0258Z
1824.0	3V8BB	5-Apr-96	0259Z
1835.6	UX0ZZ	5-Apr-96	0300Z
1840.0	D44BC	5-Apr-96	0348Z
1823.0	GU/DL6KR	4-Apr-96	0242Z
1831.1	FM5BH	4-Apr-96	0246Z
1824.0	3V8BB	4-Apr-96	0403Z
1840.0	D44BC	4-Apr-96	0403Z
1822.3	GU/DF1AL	3-Apr-96	0230Z
1826.1	HB9ATA	3-Apr-96	0305Z
1840.0	D44BC	3-Apr-96	0338Z
1835.0	SV8ZS	3-Apr-96	0346Z
1822.9	ZS6UT	3-Apr-96	0413Z
1825.9	SV8JE	3-Apr-96	0415Z
1830.9	HB9ATA	3-Apr-96	0436Z
1845.0	SV8ZS	3-Apr-96	0438Z
1826.0	ZD7VJ	2-Apr-96	0101Z
1824.4	3V8BB	2-Apr-96	0107Z
1822.9	GU/DL6KR	2-Apr-96	0409Z
1824.0	3V8BB	1-Apr-96	0358Z
1832.0	HB9ATA	1-Apr-96	0459Z
1824.0	3V8BB	1-Apr-96	2258Z
1822.8	GU/DL6KR	1-Apr-96	2259Z

80 METERS

3795.5	3D2RW	28-Apr-96	1001Z
3799.0	VK6APZ	28-Apr-96	1135Z
3504.6	UA2BD	27-Apr-96	0023Z
3799.9	OD5NJ	27-Apr-96	0037Z
3799.9	9K2MU	27-Apr-96	0101Z
3504.2	9Y4/HB9TU	27-Apr-96	0205Z
3799.9	OD5NJ	27-Apr-96	0326Z
3501.0	EM1KA	27-Apr-96	0508Z
3795.0	3D2RW	27-Apr-96	1124Z
3793.1	YO6KAF	27-Apr-96	1922Z
3799.0	9H1EU	26-Apr-96	0303Z
3797.0	LW9YY	26-Apr-96	0510Z
3800.0	9N1HP	26-Apr-96	2149Z
3794.2	XQ8ABF	25-Apr-96	0402Z
3794.0	5X4F	24-Apr-96	0345Z
3799.5	BV5BG	24-Apr-96	1923Z
3797.9	3V8BB	21-Apr-96	0445Z
3796.0	VP8AWU	21-Apr-96	0629Z
3800.0	C21NJ	21-Apr-96	1305Z
3512.0	SV9/DJ4TR	20-Apr-96	0411Z
3798.0	9N1HP	20-Apr-96	1915Z
3506.3	5X4F	19-Apr-96	0032Z
3798.8	ZP5MGR	19-Apr-96	0134Z
3792.0	T77T	18-Apr-96	0335Z
3501.4	EM1KA	18-Apr-96	0412Z
3774.2	X5ACL	18-Apr-96	1907Z
3797.2	TA1FA	18-Apr-96	1951Z
3799.8	3A2MD	17-Apr-96	0313Z
3799.8	V51E	17-Apr-96	0344Z
3794.0	5X4F	17-Apr-96	2235Z
3799.9	SV2ASP/P	16-Apr-96	0310Z
3795.0	9K5/YO9HP	16-Apr-96	1933Z
3504.5	T91EVA	16-Apr-96	2006Z
3799.5	9K2QA	16-Apr-96	2124Z
3800.0	BV5GFR	15-Apr-96	1933Z
3798.7	TT8BP	15-Apr-96	2154Z
3798.7	SU1EA	15-Apr-96	2239Z
3793.0	4L4KK	14-Apr-96	2305Z
3796.0	C94AI	14-Apr-96	2335Z
3786.9	K4ZLE/VP9	13-Apr-96	0009Z
3505.0	LZ1KOZ	13-Apr-96	0318Z
3508.7	GD/AI5P	13-Apr-96	0323Z